

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

QUEEN'S UNIVERSITY AT KINGSTON and
PARTEQ INNOVATIONS,

Plaintiffs,

v.

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG TELECOMMUNICATIONS
AMERICA, LLC,

Defendants.

Civil Action No. 2:14-cv-00053-JRG-RSP

JURY TRIAL DEMANDED

PLAINTIFFS' OPENING CLAIMS CONSTRUCTION BRIEF

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I. INTRODUCTION

The issue before the Court is the proper construction of the disputed terms of U.S. Patent Nos. 7,762,665; 8,096,660; 8,322,856; and 8,672,482. Plaintiffs Queen's University at Kingston and PARTEQ Innovations (collectively, "Queen's") submit this opening brief to assist the Court's construction.

II. DISPUTED TERMS

1. "attention"

| Queen's Construction | Samsung Construction |
|---------------------------------------|----------------------|
| "engagement with or toward a subject" | Indefinite |

About one hundred references to the term "attention" in each of the patents' specifications reveal its meaning to be "engaged with or toward a subject." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (specifications are the "best source for determining the proper context of claim terms"). The specifications expressly define the closely related term "attentive state" to mean "a measure or index of a user's engagement with or attention toward a subject," including measures such as eye-gaze direction or body orientation. '665 Patent, 6:3–8; *see Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication."). In the definition, both "attention" and "engagement" describe a person whose eye gaze or body orientation, among other potential indices, is directed at a subject. A person in such an attentive state is engaged with or toward the subject: that is, paying attention.

Claim 4 of the '665 Patent demonstrates the close relationship between the defined term "attentive state" and the disputed term "attention." Claim 4 discloses a method for modulating operation of a device based on the user's attention toward the device, "wherein sensing attention comprises sensing one or more indices selected from the group consisting of eye contact, eye movement, eye position, eye gaze direction, voice, body presence, body orientation, head and/or face orientation, user activity, and brain activity/arousal." '665 Patent, 22:4–9. Precisely

the same indices are listed as examples of “attentive states” in the definition. As such, Claim 4 nearly equates “attentive states” and “attention”; the difference is that “attentive states” are physical indicia of the user’s engagement, whereas “attention” is the engagement itself.

The prosecution histories likewise bear out this definition. For instance, in an April 19, 2010, Reply to Office Action, the patentee changed the term “attentive state” to “attention” at several places in the claims of the ’665 Patent. The accompanying remarks indicate that the claims were “amended for greater clarity.” ’665 File History, April 19, 2010 Reply to Final Office Action, at 7. The patentee’s understanding speaks to the views of a skilled artisan in the field. *See Phillips*, 415 F.3d at 1317 (explaining that the “prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention”). The patentee—a noted professor and expert in human-computer interaction—conceived the change to “attention” as effecting no substantive change. Rather, the change merely clarified that the device would assess the user’s actual engagement with or toward the subject, rather than the raw physical indicia of that engagement alone, a minute distinction akin to the difference between detecting one’s happiness rather than just his smile. This clarification apparently satisfied the examiner. *Cf.* Oct. 15, 2008 Reply to Office Action (’665 File History) (addressing examiner’s concern regarding the vagueness of the term “attentive state”); *see also Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 33–34 (1997) (noting that the legal presumption that PTO had a reason for approving an amended application “gives proper deference ... to the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable”).

Moreover, the prior art consistently used the term to mean “engagement with or toward a subject.” *See, e.g.*, Apr. 16, 2009 Reply to Final Office Action (’665 File History) (discussing prior art that “teaches sensing indirectly the driver’s attention toward the vehicle”); Sept. 23, 2013 Reply to Office Action (’482 File History) (discussing prior art comprised of a signal “that indicate[s] a user’s attention toward a screen”). “[W]hen an inventor’s understanding of a claim term is expressed in the prior art, it can be evidence of how those skilled in the art would have

understood that term at the time of the invention.” *ArcellorMittal France v. AK Steel Corp.*, 700 F.3d 1314, 1322 (Fed. Cir. 2012). The examiner used and apparently understood the term as well. *See, e.g.*, Interview Summary, Apr. 14, 2010 (’665 File History) (examiner noting that certain language “based on the user’s attention toward the device was presented for Applicant’s consideration”); *cf. Ventana Med. Sys., Inc. v. Biogenex Labs, Inc.*, 473 F.3d 1173, 1182–83 (Fed. Cir. 2006) (interpreting claim term in part based on how the examiner considered the term).

The term “attention” is not indefinite, as the Defendants contend, because it is “precise enough to afford clear notice of what is claimed” to skilled artisans. *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). The patents disclose inventions that automatically detect the user’s engagement with a device (attention) then modulate the device’s operation to correspond with the user’s attention. The Queen’s construction for the term “attention”—“engagement with or toward a subject”—could be applied in each of the hundred or so references to the term in each patent. *See Bell Atl. Network Servs., Inc. v. Covad Commc’ns Grp., Inc.*, 262 F.3d 1258, 1277 (Fed. Cir. 2001) (“Because the patentees used the [disputed term] throughout the entire patent specification, consistent with a single meaning, they defined that term ‘by implication.’”) (quoting *Vitronics*). In light of the vast intrinsic and extrinsic evidence, skilled artisans would have understood the scope of the term “attention.”

2. “sensing attention of a user”

| Queen’s Construction | Samsung Construction |
|----------------------------------------------------------------------|----------------------|
| See construction for “attention.” No further construction necessary. | Indefinite |

The term “sensing attention of a user” is also unambiguous once the proper construction of “attention” is embedded. The addenda “sensing” and “of a user” carry “their ordinary and customary meaning, according to the customary understanding of a person of ordinary skill in the art who reads them in the context of the intrinsic record.” *See Agilent Techs, Inc. v. Affymetrix, Inc.*, 567 F.3d 1366, 1376 (Fed. Cir. 2009). Applying the proper construction of “attention” with

the ordinary meanings of the other words, the term means detecting automatically the engagement with or toward a subject (the subject, in this context, usually being a device) of the person using the device.

To begin, the specifications expressly define the term “user” to mean “the entity, preferably human, who is using a device.” ’665 Patent, 5:33–34. Any skilled artisan would have understood the plain and ordinary meaning of the addendum “of a user” to the term “attention.” *See Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282, 1287 (Fed. Cir. 2010) (“To the extent possible, claim terms are given their ordinary meaning, as they would be understood by one of ordinary skill in the art in question at the time of the invention.”); *cf. Tech. Patents LLC v. T-Mobile (UK) Ltd.*, 700 F.3d 482, 491–93 (Fed. Cir. 2012) (construing the terms “originating user” and “receiving user”).

Nor does the term “sensing” add ambiguity in context. As a verb, “sense” means “perceive by the senses” or “detect automatically.” MERRIAM-WEBSTER’S POCKET DICTIONARY 305 (1995); *see also Phillips*, 415 F.3d at 1322 (explaining that dictionaries are “often useful to assist in understanding the commonly understood meaning of words”). Given that the patent discusses a mechanical process, a skilled artisan would have understood the term “sensing” under the latter definition, “as in everyday parlance.” *See 3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1333 (Fed. Cir. 2013) (construing the term “ribbon”). That meaning fits neatly in the context of the claims. In the ’665 Patent, for example, Claim 1 discloses a method comprising “a hardware sensor in or on the device for sensing attention of a user specifically toward the device”; Claim 4 discloses the same method “wherein sensing attention comprises sensing one or more indices,” such as eye contact, face orientation, or other defined measures. ’665 Patent, 21:50–54; 22:4–9. These claims, among others, reveal an invention that automatically detects the user’s attention—that is, engagement with or toward a subject—through the disclosed methods.

Given the “close kinship between the written description and the claims,” it is “appropriate ‘to rely heavily on the written description for guidance as to the meaning of claims.’” *ICU Med.*,

Inc. v. Alaris Med. Sys., Inc., 558 F.3d 1368, 1374 (Fed. Cir. 2009) (quoting *Phillips*); *see also Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”). Here, the specifications describe automatic sensing of the user’s attention as the essence of the invention. The written description explains the inability of existing electronic devices to assess a person’s attention (engagement with or toward the device) before directing communications at the person, contrary to basic human social rules. ’665 Patent, 4:25–5:14. The invention “applies such social rules to device-initiated interactions or communications, by assessing a user’s attentive state, and making a determination as to whether, when, and how to interrupt (e.g., notify) the user.” *Id.* at 5:5–8; *see also* ’665 Patent at 18:11–14 (“While most [prior research] emphasizes the use of manual input for optimizing display space [in desktop windowing systems], there has been little work on windowing systems that sense the user’s attention using more direct means.”). In this context, skilled artisans, even laymen, would understand “sensing attention of the user” to refer to this mechanical assessment—this automatic detection—of the user’s engagement with a device.

3. **“wherein the operation that is modulated is initiated by the device”**

| Queen’s Construction | Samsung Construction |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| See construction for “attention.” No further construction necessary. | Indefinite. Alternatively, “wherein the operation that is modulated is initiated by the device based on an information event and without explicit or implicit user input” |

Queen’s refers the Court to the parties’ agreed construction of “modulated” and the proposed construction of “operation of the device,” *infra* at 9-11. Applying those component constructions, the disputed term refers to device’s initiating of an action of a computer program (i.e. operation of a device) that is controlled, enabled and/or disabled, adjusted, or routed (i.e. modulated). No further construction is necessary. As the discussion of the component terms explains in detail, the Defendants fall far short of “demonstrat[ing] by clear and convincing

evidence that one of ordinary skill in the relevant art could not discern the boundaries of the claim based on the claim language, the specification, the prosecution history, and the knowledge in the relevant art,” as required to support their indefiniteness argument. *See Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010); *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (proof of indefiniteness must meet an “exacting standard”).

The Defendants’ alternative construction, which adds a limitation at odds with the claims’ text, is not the proper reading. The Defendants propose to add the confusing flourish “based on an information event and without explicit or implicit user input” at the end of the term. But the language of the claims provides that the “operation that is modulated is initiated by the device ... *based on the user’s attention toward the device.*” ’665 Patent 21:60–63; ’660 Patent 22:32–35 (emphasis added). The claims’ language is not only more precise than the nebulous “information event” language in the Defendants’ proposed construction, it employs the consistently used term “attention” rather than interjecting the vague concept of “explicit or implicit user input.” Ironically in light of their alternative argument for indefiniteness, the Defendants’ construction introduces ambiguity where none existed.

During prosecution, the patentee specifically distinguished the claimed invention from prior art on the ground that it modulated the device’s operation on the basis of the user’s attention toward the device. *See* Apr. 19, 2010 Reply to Final Office Action, at 8 (’665 File History) (“Smyth [U.S. Patent No. 6,092,058] does not teach or suggest ‘modulating operation of the device on the basis of the measure or index of the user’s attention toward the device.’ That is, Smyth does not disclose modulating operation of the display driver 3 on the basis of the human’s attention toward the display driver 3.”). “[A]n applicant’s argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope.” *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed. Cir. 2007); *Phillips*, 415 F.3d at 1317 (explaining that prosecution history can be used to “exclude any interpretation that was disclaimed during prosecution.”) (quotation omitted). The patentee’s distinction of the Smyth

patent highlights the claims' relatively narrow scope. The invention modulates the device's operations based on the user's attention toward the device, not on some broad notion of "information event" and not on a lack of "explicit or implicit user input," which contradicts the claims' express language regarding user attention.

4. **"wherein the outputting information is initiated by the device"**

| Queen's Construction | Samsung Construction |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No construction necessary. | Indefinite. Alternatively, "wherein the outputting information is initiated by the device based on an information event and without explicit or implicit user input" |

This term requires no further construction as it holds the "ordinary and customary meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *See Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1342 (Fed. Cir. 2013) (quoting *Phillips*) (internal quotation and alteration omitted). Three variations of the word "output" within the implicated claims make the meaning of the phrase "outputting information" clear in context. Similarly, the description of the invention illuminates the meaning of the phrase "initiated by the device."

Claim 1 of the '856 Patent and the '482 Patent each use multiple variations of the word "output," exposing its meaning through context. In particular, the claims disclose a method and an apparatus, respectively, comprising "at least one sensor coupled to the device that *outputs* a sensor signal" and a processor that converts the sensor signal into a "user state signal that is indicative of user attention toward a screen of the device." '856 Patent, 21:57–63; '482 Patent, 22:23–29 (emphasis added). The user state signal becomes the "basis for controlling operation of the device" wherein "the controlling operation includes determining whether to *output* information to the user" and "wherein the *outputting* information is initiated by the device." '856 Patent, 21:64–22:4 (emphases added). Stated differently, the invention puts out a sensor signal, interprets the user's attention to a device based on that signal, then puts out another

signal (the “user state signal,” *see infra* at 14–16) containing information for modulating the device based on the user’s attention to the device. A skilled artisan would have understood all three uses of the root word “output” by its basic meaning: “to produce.” MERRIAM-WEBSTER’S POCKET DICTIONARY 238 (1995); *cf.* ‘856 Patent, 21:61 (Claim 1 explaining that the method comprises “processing the sensor signal *to produce* a user state signal”) (emphasis added).

The phrase “initiated by the device” is also clear in light of the juxtaposition of user- and device-initiated communications throughout the specifications, “the single best guide to the meaning of a disputed term.” *See Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1333 (Fed. Cir. 2011). Discussing the field of the invention, the specifications explain that “this invention relates to use of eye contact/gaze direction information by technological devices and appliances to more effectively communicate with users, in device or subject initiated communications.” ‘856 Patent, 1:20–23. Although the prior art showed that “considerable effort ha[d] been directed to improving user-initiated communications, little work ha[d] been done to improve device-initiated interactions or communications” prior to the Patents. ‘665 Patent, 1:64–67. The primary purpose of the patents—and the essence of their improvement on the prior art—was to enhance device-initiated communications. *See, e.g.*, ‘865 File History, Sept. 21, 2012, Reply to Office Action, at 6 (recounting examiner’s statement that Pepper Jr. prior art “discloses all of the claimed features except for the outputting information . . . being initiated by the device”); *id.* at 8 (distinguishing De Vito prior art on the ground that it is “based entirely on systems wherein outputting of information is effected in response to user input” rather than initiated by the device). Skilled artisans would have understood the disputed term to refer to device-initiated communications as opposed to user- or human-initiated communications.

The Defendants’ alternative construction, which posits the addendum “based on an information event and without explicit or implicit user input,” is inappropriate for many of the reasons discussed *supra* at 7–8. The phrase “based on an information event” adds nothing that the claims do not already convey, and the phrase “without explicit or implicit user input” conflicts with the detection of user attention at the core of the patents.

5. “operation of the device”

| Queen’s Construction | Samsung Construction |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| “actions of a computer program on the device” | See defendants’ proposed construction for “modulating [an initiated] operation of the device” “wherein [an initiated] operation of the device is modulated” and “controlling [an initiated] operation of the device” |

The term “operation of the device” refers to the “actions of a computer program on the device.” That construction is borne out in the claims language and specifications, and it closely aligns with the teachings of several technical dictionaries in the field of computer science. The Defendants’ construction, which points to its other constructions that inexplicably append the word “initiated” at the beginning of the term, is improper.

The Queen’s construction fits “not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *See Phillips*, 415 F.3d at 1313. For instance, the specifications note that various embodiments may involve an “operation” such as “notification, communication, information transfer, and a combination thereof, or routing said notification, communication, information transfer, or combination thereof.” ’665 Patent, 2:63–67; *see also id.* at 22:47–49 (Claim 17 specifying these same actions as modulated operations). In this context, skilled artisans would understand the term “operation” to refer to actions of a computer program because notification, communication, and information transfer are all actions performed by computer programs.

The term “operation of the device” is also shown by the description of an “attentive user interface.” *See id.* at 5:44–6:2. An attentive user interface, the specifications explain, is “any hardware and/or software that senses, receives, obtains, and negotiates a user’s attention by sensing one or more indices of a user’s attentive state.” *Id.* The specifications continue that “[i]nterfacing an attentive user interface with a device comprises providing an output from the attentive user interface to the device, which controls *operation of the device*.” *Id.* (emphasis added). In other words, an attentive user interface sends the device an output containing infor-

mation about user attention (i.e. the user state signal—*see infra* at 14–16) that modifies the actions of the device’s computer programs in accordance with user attention. *See* ’665 Patent, 11:44–12:5 (listing dozens of device operations that an attentive user interface can control, including remote messaging, collocated messaging, dynamic email filtering, and forwarding). Here again, the context that skilled artisans would use to understand the terms supports the Queen’s construction.

That construction also aligns closely with the teachings of several computer science dictionaries. *See* IEEE 100 AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 767–68 (7th ed. 2000) (defining “operation” in the field of programming as a “defined action that can be performed by a computer system”); DICTIONARY OF COMPUTER SCIENCE, ENGINEERING, AND TECHNOLOGY 345 (Phillip A. Laplante, ed., 2001) (“specification of one or a set of computations”); THE ILLUSTRATED DICTIONARY OF ELECTRONICS 497 (Stan Gibilsco, ed., 2001) (“A process usually involving a sequence of steps.”); WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY 532 (Steven M. Kaplan, Lexicographer, 2004) (“3. The action or actions resulting from a single computer instruction.”). Dictionary definitions are “often useful to assist in understanding the commonly understood meaning of words,” *Phillips*, 415 F.3d at 1322, “so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents,” *Vitronics*, 90 F.3d at 1584 n. 6. Here, the relevant dictionary definitions do not contradict, but instead closely track the usage of the patents in supporting Queen’s construction.

The Defendants’ proposed construction would unjustifiably append the words “an initiated” before the word “operation.” The insertion of the bare label “initiated,” without some additional phrase like “by the device” or “by the user,” makes no meaningful difference. Every operation is initiated one way or another; the word “initiated” alone adds nothing but verbiage. *See Cat Tech. LLC v. TubeMaster, Inc.*, 528 F.3d 871, 885 (Fed. Cir. 2008) (rejecting a claim construction which would render a claim limitation meaningless). At best, the word “initiated” is redundant in context, for each of the implicated claims already includes the qualifier “initiated

by the device.” *See, e.g.,* ’665 Patent, 21:60–61. If the Defendants’ construction refers to the device-initiated nature of the operation, it renders the subsequent qualifier “initiated by the device” unnecessary. *See Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc.*, 214 F.3d 1302, 1305–07 (Fed. Cir. 2000) (rejecting a claim construction which would render claim language superfluous). On the other hand, if the Defendants’ addition of the word “initiated” would somehow limit the device’s application to operations that are already in progress, that limitation contradicts the express language regarding operations “initiated by the device.” Whether meaningless, redundant, or contradictory, adding the unnecessary word “initiated” produces absurd results.

6. **“modulating operation of the device / wherein operation of the device is modulated”**

| Queen’s Construction | Samsung Construction |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| See construction for “modulating/modulated” and “operation of the device.” No further construction necessary. | “modulating an initiated operation of the device” / “wherein an initiated operation of the device is modulated” |

Queen’s refers the Court to the parties’ agreed construction of the term “modulating/modulated” and the preceding discussion of the term “operation of the device,” *supra* at 9–11. Together, these constructions show the meaning of this term to be controlling, enabling, and/or disabling, adjusting, or routing (i.e. “modulating”) the action of a computer program on the device (i.e. “operation of the device”). The term needs no additional construction. As discussed above, the claims do not warrant the addition of the word “initiated” before the phrase “operation of the device.” That addition is either meaningless, redundant, or contradictory, all of which are improper.

7. **“controlling operation of the device”**

| Queen’s Construction | Samsung Construction |
|------------------------------------------------------------------------------------|----------------------------------------------------|
| See construction for “operation of the device.” No further construction necessary. | “controlling an initiated operation of the device” |

Queen's refers the Court to the preceding discussion of the term "operation of the device," *supra* at 9–11, which makes additional construction unnecessary. Queen's takes the Defendants' proposed construction—"controlling an initiated operation of the device"—as an acknowledgement that the meaning of the term "controlling" has no specialized meaning outside its ordinary sense. In its ordinary sense, "controlling" means much the same as the term "modulating," a term that the parties have agreed means "controlling, enabling and/or disabling, adjusting, or routing." *See also* '665 Patent, 6:15–30 (defining "modulating"). Applying the proper construction of "operation of the device," the disputed term may be rephrased as "controlling the actions of a computer program on the device." However, no such elaboration is needed.

For the reasons set forth above, the insertion of the term "initiated" is unwarranted.

8. **"user state signal"**

| Queen's Construction | Samsung Construction |
|-----------------------------------------------------------------------------------------|----------------------|
| No construction necessary. Alternatively, "information about a user's attentive state." | Indefinite. |

This term requires no construction. But if the Court decides to give a construction, it should be "information about a user's attentive state." The Defendants' argument that the term is indefinite does not hold water in light of the examples given in the specification, the prosecution history, the extrinsic evidence, and the prior art of record.

Disaggregating the components of the term makes it simple to understand: the "user state signal" is a signal about the state of the user. What is a "signal?" Used dozens of times throughout the patents, "signal" is a common term in computer science for an electronic transmission. Who is the "user?" The specifications expressly define the term "user" to mean "the entity, preferably human, who is using the device." '665 Patent, 5:33–34. So what is the "state of the user?" That much is clear from the broader context of the claims and specifications. These patents disclose inventions that automatically assess a user's attention to a device, then modulate operations of the device in accordance with user attention. For example, one embod-

iment employs an attentive user interface to switch automatically between cameras based on where the person on screen is looking. '665 Patent, 15:5–10. To do this, an attentive user interface linked to the cameras employs a sensor to detect the person's attention, processes the information derived from the sensor to assess the person's attention, then produces an electronic signal to switch between the cameras on the basis of that attention, taking the place of an off-screen producer. *Id.* The latter signal, which consists of information about the user's attentive state, is the “user state signal.”

This relatively simple interpretation makes sense in the context of the claims. Claim 1 of the '856 Patent, for example, discloses:

A method of controlling operation of a device, comprising:
 Using at least one sensor coupled to the device to output a sensor signal;
 Processing the sensor signal to produce a *user state signal* that is indicative of user attention toward a screen of the device; and
 Using the *user state signal* as a basis for controlling operation of the device;
 Wherein the controlling operation includes determining whether to output information to the user;
 Wherein the information is visual information, audible information, or visual and audible information; and
 Wherein the outputting information is initiated by the device.

'856 Patent, 21:57–22:4 (emphases added); *see also* '482 Patent, 22:23–37 (disclosing a similar apparatus). First, we read that the invention produces a “user state signal” that is “indicative of user attention toward a screen of the device.” Thus, the invention produces a signal that carries information about a user's attention toward the device. Next, we read that such signal is the basis for controlling operation of the device. Thus, the information about the user's attentive state becomes the basis for controlling the device's operation, just as user information was used to control the cameras in the embodiment above. Throughout the claim, the meaning “information about a user's attentive state” holds for “user state signal.”

If a skilled artisan had any remaining doubts about the meaning of the term “user state signal,” the prosecution history and prior art would erase them. *See Kumar v. Ovonic Battery Co., Inc.*, 351 F.3d 1364, 1368 (Fed. Cir. 2003) (explaining that prior art “can have particular value as a guide to the proper construction of the term because it may indicate not only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt that meaning”) (quotation omitted). During prosecution of the ’856 Patent, the examiner initially rejected a claim containing the term “user state signal” as anticipated by U.S. Patent No. 4,302,011 (“Pepper, Jr.”), which discloses a video game apparatus that the user controls by a finger touchscreen. In denying the claim, the examiner compared the claimed invention’s user state signal to one described in a Pepper, Jr. diagram:

Pepper, Jr. discloses controlling the operation of a gaming device, wherein unit 10 [on the diagram] provides a sensor which is coupled to the device to output a sensor signal sensed by a user’s finger. Game circuitry 20 processes the sensor signal to produce a user state signal ... which is indicative of user attention toward a screen ... of the device by movement which corresponds in all directions to the movement of a user’s finger. Based on a user’s attention to where the user wishes to position [an on-screen image], the user will correspondingly move a finger on [the touchscreen] to provide the user state signal which serves as a basis for controlling operation of the gaming device.

’856 File History, Office Action, Aug. 20, 2012, at 2 (diagram references omitted); *see also* ’856 File History, Sept. 21, 2012, Reply to Office Action, at 6 (patentee distinguishing Pepper, Jr. on other grounds). In Pepper, Jr. as well as the patents in suit, the term “user state signal” refers to information about the user’s engagement with a device. The consistent use of the term in the prior art and the patents shows its meaning was clear to skilled artisans at the time of invention.

9. **“processing the sensor signal to produce a user state signal that is indicative of user attention toward a screen of the device”**

| Queen’s Construction | Samsung Construction |
|---------------------------------------------------------------------------------------------------------------------------|----------------------|
| See construction for “attention” and alternative construction for “user state signal.” No further construction necessary. | Indefinite. |

The disputed terms “attention” and “user state signal” are important components of this phrase. *See supra* at 1–3 and 12–14, respectively. Embedding the appropriate constructions of those components, the meaning of the disputed phrase becomes “processing the sensor signal to produce information about a user’s attentive state (i.e. a user state signal) that is indicative of the user’s engagement with or toward (i.e. attention) a screen of the device.” No further construction is necessary. Indeed, the coherency of the component definitions in the context of the phrase demonstrates the accuracy of the Queen’s constructions. Because skilled artisans would understand the component terms and context, the phrase is not indefinite.

10. **“measure or index”**

| Queen’s Construction | Samsung Construction |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No construction necessary. Alternatively, “a value that identifies a quantity.” | “A value that identifies a quantity based on sensed eye contact, or eye movement, or eye position, or eye gaze direction, or voice, or body presence, or body orientation, or head and/or face orientation, activity, and/or brain activity/arousal” |

If this term requires construction at all, the construction should be “a value that identifies a quantity.” Although the parties agree on that much, the Defendants’ construction—“a value that identifies a quantity based on sensed eye contact, or eye movement, or eye position, or [certain other indicia]”—adds a limitation not in the claims. The specifications and file history do not support the Defendants’ additional limitation.

The term “measure or index” is broader than the Defendants’ construction permits. While the Defendants’ construction is limited to values identifying quantities of certain indices, the specifications deem such indicia mere “examples” of measures or indices. In defining the term “attentive state” to mean “a measure or index of a user’s engagement,” the specifications explain that “[e]xamples of such indices are eye contact, eye movement, eye position, [etc.]” ’665 Patent, 6:3–8. The patents’ recognition of these “examples” implies that other measures or indices beyond these examples exist. *Cf. Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 735 (Fed.

Cir. 2014) (“The only instances in which the specification discusses using the claimed invention to verify *application* programs are found in examples that the specification makes clear are not limiting. Thus, nothing in the specification would lead one of ordinary skill in the art to understand that the claims use ‘program’ in a sense narrower than its ordinary meaning.”) (citations omitted). Measures and indices are not limited to their examples. The term “measure or index” refers to values that identify a quantity, not just the specific examples in the specification.

The claims themselves show that the term “measure or index” is broader than these examples. Claim 4 of the ’665 Patent, for instance, further limits an aspect of the method of Claim 1 to “one or more indices selected from the group consisting of eye contact, eye movement, eye position, [etc.].” *Id.* at 22:4–9. The Defendants’ construction would make Claim 4 redundant of Claim 1 because the Defendants’ construction reads Claim 4’s additional limitation into Claim 1. But that reading contradicts the presumption of a “difference in meaning and scope when different words or phrases are used in separate claims.” *Tandon Corp. v. United States Int’l Trade Comm’n*, 831 F.2d 1017, 1023 (Fed. Cir. 1987); *Modine Mfg. Co. v. United States Int’l Trade Comm’n*, 75 F.3d 1545, 1551 (Fed. Cir. 1996) (“When a limitation is included in several claims but is stated in terms of apparently different scope, there is a presumption that a difference in scope is intended and is real. Such a presumption can be overcome, but the evidence must be clear and persuasive.”).

This presumption—the foundation of claim differentiation—counsels against constructions of root claims that would nullify additional limitations in dependent claims. *See Comark Comm’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (employing claim differentiation to reject construction of a Claim 1 term that would render an additional limitation imposed in Claim 2 redundant); *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed. Cir. 1985). The Defendants’ reading of “measure or index” envisions the same scope for Claim 1 and Claim 4, giving rise to a presumption that the reading is wrong. The Defendants cannot rebut that presumption by clear and convincing evidence. By contrast, the Queen’s reading of “measure or

index” as “a value that identifies a quantity” conceives Claim 1’s proper scope and enables Claim 4’s additional limitation.

11. “notify/notification”

| Queen’s Construction | Samsung Construction |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| No construction necessary. Alternatively, “signaling or soliciting for a user’s attention” | “signaling or soliciting the user for consideration of an information event” |

The patents expressly define the term “notify/notification” to mean “signaling or soliciting, usually by a device, for a user’s attention.” ’665 Patent, 6:9–11. Because the Patents “clearly set forth a definition of the disputed claim term,” this definition governs. *See Thorner v. Sony Comp. Ent’t Amer. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (quotation omitted); *Phillips*, 415 F.3d at 1316 (where the specification reveals “a special definition given to a claim term by the patentee ... the inventor’s lexicography governs”). The elaborative phrase “usually by a device” may be omitted. That leaves the meaning of the disputed term as “signaling or soliciting for a user’s attention.”

Other references to the term “notify/notification” in the specifications support this reading. For instance, the patentee’s definition notes that, “[f]or example, notification can employ any cue(s) that act on a user’s senses to solicit the user’s attention, such as one or more of audio, visual, tactile, and olfactory cues.” ’665 Patent, 6:11–14. Similarly, the written description explains that the invention mimics human interaction “by assessing a user’s attentive state, and making a determination as to whether, when, and how to interrupt (e.g., notify) the user on the basis of the user’s attentive state.” *Id.* at 5:4–9. In addition, the specifications describe an embodiment wherein the “modulating step comprises notifying said user progressively, from a less interruptive notification to a more interruptive notification.” *Id.* at 2:37–43. In these and other references throughout the patents, the term “notify/notification” refers to signaling or soliciting for the user’s attention.

Although the Defendants agree that the term means “signaling or soliciting the user,” they seek to add that the notification must relate to “consideration of an information event.” The Defendants’ construction interjects a new nebulous term—“information event”—that is foreign to the patents, appearing not once in any of the claims. The Defendants’ construction would require further construction of this term in order to understand the meaning of the term “notify/notification.” See *Advanced Fiber Techs. (AFT) Trust v. J&L Fiber Servs., Inc.*, 674 F.3d 1365, 1373 (Fed. Cir. 2012) (explaining that a term not found in any of the claims should be construed only if “the correct construction of a claim term necessitates a derivative construction”); *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009) (“[W]e do not ordinarily construe words that are not in the claims.”); see also *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339 (1961) (“[T]he claims made in the patent are the sole measure of the grant.”). That effort is unnecessary here because the limitation to “information events” should not be read into the claims.

Such a limitation would exclude preferred embodiments. In particular, one embodiment contemplates an “attentive appliance” invention with the capability to deliver messages to the user about an appliance. See ’665 Patent, 19:40–21:21. For example, the invention can deliver audio messages about items in a refrigerator to any person that retrieves the items. *Id.* at 42–51. The specifications explain that the invention “will lower the notification level of the message the moment a user is perceived to be no longer interacting directly with the appliance. ... If the priority of the message is determined higher than those other messages in the user’s notification queue, [the invention] will attempt to progressively notify the user of the message up to a user-determined number of times.” *Id.* at 20:64–67, 21:3–7. This embodiment envisions notifications that have nothing to do with considering an information event. Rather, this embodiment strategically notifies a user, based on the user’s attention, to consider preset messages about the appliance. The event that triggers that notification—whether a hand grabbing an item in the refrigerator, or the user’s questioning, or any number of other possible triggers—is not the subject of the notification itself. Because the Defendants’ construction requires notifications

always to signal or solicit the user to consider an information event, it would exclude this preferred embodiment. Of course, a claim interpretation “that excludes the preferred embodiment[s] from the scope of the claim,” like the Defendants’ here, “is rarely, if ever, correct.” *Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013).

Although a diagram in the specifications mentions notifications about an information event, *see* ’665 Patent, Figure 3, reading this limitation into the claims would be “one of the cardinal sins of patent law.” *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001); *DSW, Inc. v. Shoe Pavilion, Inc.*, 537 F.3d 1342, 1348 (Fed. Cir. 2008) (“[W]hen claim language is broader than the preferred embodiment, it is well-settled that claims are not confined to that embodiment.”); *Phillips*, 415 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining claims to those embodiments.”). Absent “highly persuasive evidentiary support” to the contrary, *see SynQor, Inc. v. Artesyn Techs., Inc.*, 709 F.3d 1365, 1379 (Fed. Cir. 2013), the term “notify/notification” must be broad enough to cover embodiments like the one contemplated by Figure 3 as well as embodiments like the attentive appliance discussed above. The construction that fits the scope of the claims and enables all the preferred embodiments is the one provided in the patentee’s own lexicon.

12. **“wherein sensing attention comprises sensing one or more indices selected from the group consisting of ... user activity”**

| Queen’s Construction | Samsung Construction |
|----------------------------------------------------------------------------------------------|----------------------|
| See constructions for “attention” and “measure or index.” No further construction necessary. | Indefinite |

This phrase requires no further construction beyond application of the proper constructions for the terms “attention,” “sensing attention of a user,” and “measure or index.” *See supra* at 1–3, 3–5, and 15–17, respectively. Applying those constructions, the resulting meaning is: “wherein sensing engagement with or toward a subject (i.e., attention) comprises sensing one or

more values that identify a quantity (i.e., indices) selected from the group consisting of ... user activity.” Claims that incorporate this phrase narrow the scope of how the invention senses user attention to certain enumerated measures.

The Defendants are wrong to contend that skilled artisans would not understand the term “user activity.” In the context of the claims, the term “user activity” appears at the end of a lengthy list of other physical indices of attention, including eye contact, eye movement, eye position, eye gaze direction, voice, body presence, body orientation, and more. *See, e.g.*, ’665 Patent, 22:4–9. A nearly identical list appears in the specifications as examples of “attentive states” in the definition of that term. *Id.* at 6:3–8. In light of this context, a skilled artisan would read “user activity” to refer to the same kind of cues as the others listed. *See Totes, Inc. v. United States*, 69 F.3d 495, 498 (Fed. Cir. 1995) (“Under the rule of *ejusdem generis*, which means ‘of the same kind,’ where an enumeration of specific things is followed by a general word or phrase, the general word or phrase is held to refer to things of the same kind as those specified.”) (construing a statute). In particular, skilled artisans would understand “user activity” to refer to observable measures or indices of a user’s attention.

Moreover, the specifications offer insight into the types of observable measures that “user activity” encompasses. For instance, the specifications note that “an attentive user interface might progressively signal for the user’s attention ... through a channel that is peripheral to the user’s current activity.” ’665 Patent, 9:42–45. Elsewhere the specifications provide that a “device remains in the periphery of user activity until the user has acknowledged the device’s request for attention.” *Id.* at 11:25–27. These references to user activity, among others, show that the term refers to whatever the user is doing. In the context of the claims, skilled artisans would read the inclusion of the term “user activity” to mean that, in addition to measures like the user’s eye gaze direction or face orientation, the invention might also assess user attention by accounting for what the user is doing. *See, e.g., id.* at 16:45–46, 16:54–58, 17:8–9 (discussing an embodiment that assesses attention in part based on when a hypothetical user “Alex enters his living room” or “goes to the kitchen” or “gets up” from the couch). User activity is merely another potential

measure of user engagement that the invention may consider in assessing the user's attention. Skilled artisans would understand the term and the larger phrase in which it appears.

III. CONCLUSION

The Defendants contend nearly every disputed term is indefinite or, alternatively, posit constructions that add limitations and terms that the evidence does not support. By contrast, the Queen's constructions accord with the broader context of the claims and specifications and could be consistently applied every time a disputed term appears in the patents. Accordingly, Queen's urges the Court to adopt its constructions.

Dated: January 14, 2015

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of **Plaintiffs' Opening Claims Construction Brief** has been served on Defendants' counsel of record via CM/ECF electronic service and email this 14th day of January, 2014.

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CERTIFICATE OF COMPLIANCE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a). Therefore, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed. R. Civ. P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email on this the 14th day of January, 2015.

Dated: January 14, 2015

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